PARTI

Capital and Credit in Economic Growth

- Agricultural Growth Problems
- Capital Formation
- ► Capital Market Structure
- Capital Productivity
- Capital and Credit Trends



Chapter 1

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The Economic Growth Problem

GRICULTURE HAS EXPERIENCED unprecedented changes in the technology and economics of production and marketing since 1940. This general trend is expected to continue at a rapid pace. Capital and credit in agriculture represent an important and somewhat neglected aspect of the substantial adjustment and economic growth problems facing American agriculture. These problems are important nationally, and they have some especially important implications for southeastern agriculture.

Changes in labor productivity of agriculture indicate to a large degree the extent of both capital-labor substitution and the adoption of yield-increasing technology. In 1958, for instance, output per farm worker was almost 90 percent above the 1947-49 average. This average rate of increase in farming productivity was more than three times the rate of increase in productivity in nonfarm sectors. A tremendous increase in the amount of capital used per worker has accompanied this rapid rate of change. The amount of capital per worker has been increased through a rapid transfer of capital among families in agriculture and the use of more nonfarm capital. Finally, the economic and technical changes in farming have been associated with a cost-price squeeze and relatively low aggregate levels of farm incomes. These income levels suggest increasing problems of capital accumulation and use of credit.

The growth in agriculture differs from the growth in the rest of the economy in many respects. Several characteristics of agriculture which differ, in degree at least, from most nonfarm industries include: (1) a higher rate of technological change; (2) inelastic demand for its products; (3) the difficulty of controlling production; (4) the "rugged individualism" of farm operators; (5) the chronic high level of underemployment of labor in some regions; and (6) a high degree of risk and uncertainty. The critical problems associated with future agricultural growth are efficiency in resource use and levels of living.

Problems of American agriculture arise from the growing interrelations with the nonagricultural economy, technological innovations in agricultural production, and the changing structure of demand for our farm products in the United States and foreign countries.

The current and prospective needs for adjustments within agriculture

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are great and well known.¹ The adjustments of agriculture to changes in its economic and technical environment are a continuing process, and probably these adjustment pressures and needs will continue in future decades. Since agricultural adjustments are made largely for relatively long-run periods because of specified use and fixed investments, farmers must be aided and guided toward making the right kinds of changes (cf. Chapters 21, 23, and 24).

Considering some of the major trends that are occurring and are projected for the future, attention must be focused more clearly on capital formation in agriculture (Chapters 2 and 3) and the adequacy of the capital and credit structure of agriculture (Part III). Many people are of the opinion that the farm credit system for American agriculture is partly out of date, and that it should be adjusted to permit the guiding of changes that would foster an orderly development of our agricultural economy. Murray and Diesslin discuss this subject in Chapters 11 and 13. Studies dealing with farm adjustments throughout the United States indicate that capital is a crucial limiting factor which prevents farm operators from obtaining desirable returns for their management, labor, and investment.² That is to say, from the standpoint of the individual farm or area, increased farm income depends largely upon the extent and effectiveness with which the farm firm can use additional capital.

NATURE OF NATIONAL AGRICULTURAL GROWTH

Any change in national economic growth requires adjustments in agriculture. Three broad types of farm adjustments generated by national economic growth are discernible. They are: (1) demand for farm labor, (2) development and production of nonfarm inputs for use in agriculture, and (3) demand for farm products.

Such changes encourage adjustments in agriculture, and in a highly developed economy such as that of the United States, agriculture will generally be faced with a cost-price squeeze; this results because its position is declining relative to that of other industries. Further, the growth of inputs produced in nonfarm sectors increases the output from

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¹ The general problem and policies of American agriculture are discussed in detail elsewhere. For example, see Problems and Policies of American Agriculture, Iowa State University Center for Agricultural Adjustment, Iowa State University Press, Ames, Iowa, 1959; Policy for Commercial Agriculture – Its Relation to Economic Growth and Stability, Joint Economic Committee Report, 85th Cong., 1st Sess., Nov. 22, 1957. Also, there are many articles in leading journals, and in college and other public and private agency reports.

²See, for example, J. Gwyn Sutherland, C. E. Bishop, and B. A. Hannush, "An economic analysis of farm and nonfarm uses of resources on small farms in the Southern Piedmont, North Carolina," N. C. Agr. Exp. Sta. Tech. Bul. No. 138, May, 1959; A. B. Mackie, E. O. Heady, and H. B. Howell, "Optimum farm plans for beginning tenant farmers on Clarion-Webster Soils," Iowa Agr. Exp. Sta. Bul. 449, April, 1957; E. T. Baughman, "Contributions of credit policy to financing needed farm adjustments and to transferring ownership of farms," Policy for Commercial Agriculture, op. cit., pp. 339-48; C. B. Baker and H. G. Halcrow, "Problems in agricultural reorganization," Problems and Policies of American Agriculture, op. cit., pp. 97-113. The above represent a few of the many references that could be cited here.

agricultural resources (Chapters 6 and 7). This is one characteristic of a progressive economy. Well-developed economies are characterized not by how many, but by how few resources are employed in the primary industries. Consequently, as the national income or national product increases, the relative position of agriculture would be expected to decline.

The significance and extent of the adjustments resulting from the increasing importance of other industries relative to agriculture depend partly on future growth and changes in population, technology, innovations, government and firm policies, and other factors. When there is full employment in the economy, national economic growth tends to (a) encourage the substitution of capital and industrial products for farm labor and land, thus changing the input and cost structure of agriculture, and (b) to produce differential rates of change in the demand for farm and nonfarm products.

Major adjustments will be required as a result of forces operating within agriculture. Age, education, and financial position of farmers, for example, significantly affect the adoption of technology and increases in the size of farms. This point is developed more fully in Chapters 20 and 21. The internal agricultural adjustments are partly of a locational nature and result from changes in the competitive position of different regions in the production of different types of products. Since 1940 there has been a noticeable trend toward specialized production in a number of farm products at both area and firm levels. The relative competitive position of agriculture in a given region of the United States results from (a) price relationships, (b) adaptation of physical resource endowments to changes in technology and markets, (c) ability to accumulate capital, (d) nearness to market, and (e) the advantage of specialization or diversification of production.

The relative significance of agriculture in the United States economy can be pictured in terms of population and percentage of national income since 1910. In 1910 about 35 percent of the total population of the United States was on farms. This percentage had declined to 16.5 by 1950, and to 11.8 by 1958, and the proportion of the national income derived from agriculture declined at about the same rate.

The proportion of the national income derived from agriculture was 16 percent in 1910. This percentage had declined to 8 percent by 1950, and to 5 percent by 1958. If the 1975 population projections of 220 to 230 million people for the United States materialize, the levels of farm population (8 to 10 percent) and farm income (3 to 4 percent) will continue to decline. Farm population since 1940 has decreased relatively as well as in absolute numbers. Associated with this decline in farm population has been the decline in farm numbers. Data on changes in farm numbers are presented in Chapter 7, Table 7.5.

Total farm output and the physical efficiency of resources used in farming have been increasing at a rapid pace. Farm output in 1959 was more than a fourth higher than it was in 1950. The 1958 output per unit of input was 23 percent above the 1947-49 average.³

³Agricultural Outlook Charts 1960, USDA, Washington, D. C., Nov., 1959, p. 50.

Rapid adoption of output-increasing technologies, coupled with the nature of demand, have resulted in lower farm prices. While average costs have been reduced, total costs have increased; since 1950, expenditures have absorbed a larger percentage of gross revenue. Since about 70 percent of gross revenues are used for production expenses, farmers are under constant pressure to maintain high levels of gross revenue. Further, the increased dependence on purchased factors of production has tied the agricultural sector more closely to the rest of the economy.

The rapid progress achieved in agriculture since 1940 has been associated with major changes in the cost structure of agriculture. The dramatic nature of these changes has been analyzed in a recent study.⁴ In 1958 the farm family labor input was less than half the amount used during the 1930's. The total quantity of farm-owned capital had increased by one-third, while the use of purchased inputs and capital services purchased from the nonfarm sectors had increased by twothirds (Table 1.1).

| Years | Farm family labor | Farm-owned capital | "Purchased" inputs ^a | Total | |
|---------|----------------------|-----------------------|------------------------------------|-------|--|
| 1910-19 | 148 | 96 | 58 | 88 | |
| 1920-29 | 149 | 90 | 70 | 94 | |
| 1930-39 | 139 | 91 | 70 | 92 | |
| 1940-49 | 115 | 88 | 93 | 100 | |
| 1950-58 | 79 | 120 | 112 | 102 | |
| 1958 | 64 | 128 | 117 | 101 | |

| Table 1.1. | Indices of Agricultural Inputs, | 1910-58 |
|------------|---------------------------------|---------|
| | (1947 - 49 = 100) | |

Source: R. A. Loomis and G. T. Barton, Productivity of Agriculture, United States, 1870-1958, USDA, Tech. Bul.

^a Includes both materials and services purchased from nonfarm sectors and rent and interest on nonfarm-owned capital.

Farm family labor has declined while capital and purchased inputs have increased. As a result, each unit of farm operator and family labor now uses three times more capital and nearly four times the purchased inputs and capital services it used in 1930 (Figure 1.1). Related data are presented in Chapters 6 and 7.

Changes in the averages overstate somewhat the changes occurring on commercial farms in many regions. Much of the labor resources withdrawn from agriculture has come from small farms with very small capital investments. Withdrawal of these farms would tend to increase the average size of farms even though no changes occurred in the larger commercial farms. Substantial changes have occurred on commercial

⁴R. A. Loomis and G. T. Barton, Productivity of Agriculture, United States, 1870-1958, USDA, Tech. Bul. (In press.)

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farms, however. In 1959, for example, the value of farm capital on selected commercial farms ranged from 3-1/2 to more than 5 times the value in 1940 (Table 1.2). Expenditures in 1959 also were at 3 to 4 times the 1940 level (Table 1.3). In general terms, somewhat more than half of these increases are associated with increases in costs.



Fig. 1.1. Agricultural inputs per unit of farm operator and family labor, 1910-58 (1947-49 = 100).

Our rapid growth in farm output and productivity is related to the technological revolution in agriculture and to the increased use of non-farm inputs. About 55 percent of the inputs used in agriculture come from nonfarm sources.⁵ These nonfarm inputs have the following three important effects:

1. Use of nonfarm inputs generally increases output per farm and in total. This is particularly true when shifting from animal to tractor power and when increasing the use of fertilizers and pesticides. However, most types of nonfarm inputs tend to increase product per acre and per unit of livestock.

2. The characteristics of nonfarm inputs impede commercial farmers in changing from production to nonproduction during short periods of time. Many nonfarm inputs represent capital investments for use over a number of years. Capital charges, depreciation and repairs on farm buildings, power, and machinery account for more than half of the annual nonfarm inputs in the United States. To a large extent, "fixed" labor resources are replaced by "fixed" machinery and equipment investments. Thus, even large-scale farms have a relatively low proportion of inputs that can be classed as variable.

⁸ Loomis and Barton, op. cit.

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| | Average | e value | 1959 as a | |
|---|-------------------------------|-------------------|--------------------|--|
| Type of farm | 1940 | 1959 ^a | percent of 1940 | |
| | (Doll | (Percent) | | |
| Dairy farms, Central Northeast: | | | | |
| Total farm capital, January 1 | 9,600 | 38,750 | 404 | |
| Land and buildings | 5,300 | 20,550 | 388 | |
| Livestock and equipment | 3, 400 | 15, 430 | 454 | |
| Hog-beef fattening farms. Corn Belt: | | | | |
| Total farm capital, January 1 | 20,990 | 75,420 | 359 | |
| Land and buildings | 14,220 | 48,120 | 338 | |
| Livestock and equipment | 4,860 | 21,100 | 434 | |
| Cash-grain, Corn Belt: | | | | |
| Total farm capital, January 1 | 31.470 | 112.280 | 357 | |
| Land and buildings | 26,250 | 93,930 | 358 | |
| Livestock and equipment | 2,900 | 10,830 | 373 | |
| Cotton farme Black Brainie | | | | |
| Total farm canital January 1 | 8 820 | 34 210 | 388 | |
| Land and huildings | 7 240 | 28 420 | 393 | |
| Livestock and equipment | 1,320 | 5, 320 | 403 | |
| Cotton farms (irrigated), High Plains, Texas: Total farm capital, January 1 Land and buildings | 24,120 ^b 18,300 | 107,850 96.300 | 447 526 | |
| Livestock and equipment | 4,900 | 10,840 | 221 | |
| Southern Diedmont. | | · | | |
| Total farm capital. January 1 | 4,760 | 20.430 | 429 | |
| Land and buildings | 3,670 | 17.010 | 463 | |
| Livestock and equipment | 880 | 2,920 | 332 | |
| Tobacco-cotton farms North Carolina | | · | | |
| Total farm capital January 1 | 6 770 | 24 530 | 362 | |
| Land and buildings | 5,500 | 20,000 | 364 | |
| Livestock and equipment | 1,080 | 3,790 | 351 | |
| Wheat-small grain-livestock farms, Northern Plains: | | · | | |
| Total farm capital, January 1 | 10,830 | 57,610 | 532 | |
| Land and buildings | 7,230 | 33,980 | 470 | |
| Livestock and equipment | 2,710 | 16, 840 | 621 | |
| Wheat-pea farms. Washington and Idaho | - | | • | |
| Total farm capital. January 1 | 35,970 | 183,810 | 511 | |
| Land and buildings | 29,060 | 155,000 | 533 | |
| Livestock and equipment | 4,620 | 22,020 | 477 | |
| | • | | | |

Table 1.2. Value of Capital Per Farm, Specified Types of Commercial Family-Operated Farms, 1940 and 1959

Source: Tabulated from studies of costs and returns by type of farm made in the Farm Economics Research Division, ARS. See USDA Info. Bul. 176, Revised, 1959.

^a Preliminary. ^b 1944 data. First year of study.

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|-----------------------------|---|
|-----------------------------|---|

| | Farms | | | | | | | | | | |
|--------------------------------------|--------------------------------------|--|--------------------------------------|---|--------------------------------------|--------------------------------------|--|--------------------------------------|--|--|--|
| | Dairy | Corn E | Belt | Tobacco-cotton | | Cotton | | Spring wheat | Winter wheat | | |
| Year | Central Northeast | Hog-beef fattening | Cash grain | North Carolina | Southern Piedmont | Black Prairie, Texas | High Plains, Texas (Irri.) | Wheat- small grain- livestock | Wheat- pea Washington and Idaho | | |
| | (Dollars) | | | | | | | | | | |
| 1930 1931 1932 1933 1934 | 2184 1704 1340 1346 1539 | 2962 2125 1755 1506 1764 | 1876 1523 1244 1134 1193 | | 933 660 469 557 648 | 852 717 533 667 575 | | 1776 1095 1077 866 887 | | | |
| 1935 1936 1937 1938 1939 | 1661 1798 2149 2016 2078 | 2544 2089 2661 2741 3124 | 1494 1671 1936 1971 2031 | | 680 734 857 722 786 | 650 768 1037 851 825 | | 1439 1042 1547 1421 1419 | 2865 3423 3470 3345 3097 | | |
| 1940 1941 1942 1943 1944 | 2241 2534 2874 3219 3873 | 3576 4007 4652 4967 5355 | 2224 2426 2717 2897 3359 | ^a 1143 1369 1757 1890 2487 | 861 870 1130 1260 1402 | 946 1053 1232 1399 1623 | ^a 5707 | 1641 2044 2448 2844 3181 | 3612 3896 4916 4938 4891 | | |
| 1945 1946 1947 1948 1949 | 3954 4308 4830 5558 5175 | 5728 6911 8225 11,102 10,122 | 3519 3998 4511 5045 5281 | 2662 3423 3493 3536 3486 | 1448 1785 1808 2021 1889 | 1618 1869 2711 2914 3736 | 4387 6130 10, 108 9864 11, 982 | 3478 3695 4816 5497 4999 | 4674 6093 7526 7363 6462 | | |
| 1950 1951 1952 1953 1954 | 5409 5804 6140 6110 5964 | 11,590 13,438 12,775 11,122 12,628 | 5518 5906 6071 6254 6426 | 3880 4707 4425 4360 4554 | 1868 2533 2697 2965 2531 | 2833 3471 3814 4604 3269 | 10,067 13,403 14,476 14,415 14,698 | 5117 5888 5317 5365 5181 | 7170 8533 9753 8895 9532 | | |
| 1955 1956 1957 1958 | 5844 5966 6600 7130 | 11,937 11,341 12,871 14,842 | 6408 6464 6743 7092 | 4704 4508 3745 4185 | 2758 2362 2212 2425 | 3734 3085 3229 3491 | 15,391 15,328 13,239 14,046 | 5536 5344 5264 5950 | 10,018 10,413 10,804 10,988 | | |

Table 1.3. Cash Expenditures for Specified Types of Commercial Family-Operated Farms, 1930-58

Source: Tabulated from studies of costs and returns by type of farm made in the Farm Economics Research Division, ARS. See USDA Info. Bul. 176.
^aFirst year of study.

3. In general, use of nonfarm inputs increases earnings of the individual farmer even in periods of low prices, as most nonfarm inputs have a high marginal productivity per dollar of increased expenses. Heady develops this point in Chapter 7.

Because of these three effects, commercial farmers tend to strive for an expanded total output. Operators respond to favorable price and income relationships by (a) increasing the use of nonfarm variable inputs, such as fertilizers and pesticides and (b) making new capital investments to increase intensity of operations or to enlarge units for more efficient operation. More capital-intensive uses of land are encouraged.

Many farmers lag in adopting new technology even under favorable

income conditions because they lack knowledge about its effects; sometimes they cannot or will not obtain needed finances, take the added risks, or acquire the necessary technical and managerial skills. A more detailed development of this subject is presented in Chapters 20 and 21. Adoption of new technology usually reduces costs per unit of output, but as indicated, it usually increases total output. Most farmers respond to cost-reduction opportunities by adding inputs to their existing stock of resources. The increased output will mean more income to the individual farmers. That is, each farmer responds to a horizontal demand curve, usually without realizing that the over-all increased output resulting from the widespread adoption of new techniques will eventually depress prices. But even if the consequences are foreseen, an individua farm operator who increases his output thus maximizes his returns.

Once total output has expanded, it does not shrink when prices fall and costs rise. This phenomenon results because individual farmers usually cannot increase their net incomes by reducing output.⁶ In some cases, a change in enterprises may increase net incomes. Farmers will quit farming only if their returns from alternative employment, plus the returns from salvaging investments in "fixed resources," exceed their expected returns from farming. If they liquidate machinery, livestock, and equipment in order to take nonfarm employment, they will lose heavily on their original investments. Consequently, most farmers continue in the hope of more favorable future developments. Farmers who liquidate will sell to others who will buy the resources at lower costs; and in the short-run the new owners are likely to use them at the same or higher levels of intensity.

Meanwhile, farmers who have not adopted the new improvements have acquired more knowledge. Most important, they usually find that the marginal productivity of additional capital, even at lower product prices, is still high enough to yield a net return. For the individual farmer who is operating a going concern, the adoption of these technological developments will likely continue to pay. Many farmers are only partly adjusted to current technology and prices. The marginal returns of another insecticide application or another 40 acres of cropland, for example, can be very high. Other farmers can increase incomes through major changes in their farming systems. An analysis by Johnson and Bachman indicates the returns per dollar of added expense that farmers in eight typical situations would receive by adopting systems recommended by research economists. Price ratios of 84 to 90 were used in these studies. The calculated net returns per dollar of added expense, including interest and depreciation, ranged from \$1.50 to \$2.72.7

⁶G. L. Johnson, "Supply function – some facts and notions," Agricultural Adjustment Problems in a Growing Economy, E. O. Heady, H. G. Diesslin, H. R. Jensen, and G. L. Johnson, eds. Iowa State University Press, Ames, Iowa, 1958, pp. 74-93.

⁷S. E. Johnson and K. L. Bachman, "Recent changes in resource use and in farm income," Problems and Policies of American Agriculture, Iowa State University Center for Agricultural Adjustment, Iowa State University Press, Ames, Iowa, 1959.

How have these changes in technology and prices of resources affected capital use? How are they affecting the capital and credit problems of American agriculture? These questions are analyzed in Chapters 6 and 7.

ECONOMIC GROWTH AND FARM SIZE ADJUSTMENT

Much of the economic growth problem in agriculture is related to the development of sizes of farms that will effectively utilize modern technology and production methods. American agriculture is characterized by a wide diversity in the nature and size of its farms (see Chapter 4). Marked adjustments have occurred in numbers and sizes of farms, but rapid changes have also occurred in the sizes of farms needed to utilize effectively the developments in machinery, equipment, and other technology.

In broad outline, the total number of farms and the number of commercial farms have declined progressively since 1930. The number of part-time and residential farms increased until 1950. Since 1950, the number of these noncommercial farms has declined also.

Since 1940 the number of commercial farms has declined rapidly.⁸ The most rapid decline has been in the small-scale commercial farms (Economic Classes V and VI) which produce less than \$2,500 worth of products for sale at 1954 prices. At the other end of the size scale, numbers of Classes I and II farms, or those that produce over \$10,000 worth of farm products for sale at 1954 prices, have steadily increased. Numbers of farms in Economic Class II increased until 1950, but have been declining since that time.

Some reasons for these trends in the context of a growing and prosperous nonfarm economy become apparent if one considers how much a farmer must sell to obtain a specified income. Recent studies of resource use under projected prices indicate that in several type-offarming areas sales totaling more than \$12,000 would usually be needed to provide incomes of \$3,500 to operator and family labor.⁹ From the standpoint of volume of sales, these farms were generally comparable to the farms in Economic Class II. The projected income of \$3,500 is more than \$500 below the median earnings of semiskilled workers in industry. Further, nonfarm earnings are increasing each year, and by 1975 they are expected to increase nearly 50 percent.

Capital investments on most of these farms ranged from about \$30,000 to more than \$100,000. Average investments in 1954 for Economic Class II farms in selected areas and by types of farms are shown in Table 1.4. Investments for selected farms ranged from \$50,000 to

⁸J. V. McElveen, Family Farms in a Changing Economy, USDA Info. Bul. 171, Mar., 1957, p. 19.

⁹ J. M. Brewster, Farm Resources Needed for Specified Income Levels, USDA Info. Bul. 180, 1957.

\$100,000. In terms of 1960 dollars, these investments would be somewhat higher because of the higher prices of land, machinery, and equipment.

| Type of farm and area | Average value of investment 1954 | | | |
|--------------------------------|-------------------------------------|--|--|--|
| | (Dollars) | | | |
| Cotton farms: | | | | |
| Eastern Coastal Plains | 45,887 | | | |
| Mississippi-Alabama hilly area | 58,173 | | | |
| Delta area | 53,685 | | | |
| High Plains area | 64,005 | | | |
| Western irrigated area | 67, 270 | | | |
| Wheat farms: | | | | |
| Central Oklahoma-Kansas | 89,190 | | | |
| Red River Valley | 71,716 | | | |
| Washington-Oregon | 102, 304 | | | |
| Dairy farms: | | | | |
| Gulf Coast | 44,267 | | | |
| Nashville Basin | 48,304 | | | |
| Northern Lake | 48,308 | | | |
| Livestock farms: | | | | |
| Central Corn Belt | 73,035 | | | |
| Eastern Corn Belt | 69,275 | | | |
| Western Corn Belt | 68,004 | | | |

| Table | 1.4. | Capital | Investment | on | Class | Π | Farms |
|-------|------|---------|------------|----|-------|---|-------|
|-------|------|---------|------------|----|-------|---|-------|

Source: Data tabulated from the following U. S. Census-ARS Special Reports: "Cotton producers and cotton production," by R. B. Glasgow; "Dairy producers and dairy production," by P. E. McNall; "Cash grain and livestock producers in the Corn Belt," by E. G. Strand; and "Wheat producers and wheat production," by A. W. Epp.

Adjustment in size of farm is a major problem connected with the economic growth of U. S. agriculture. In 1954 only about 20 percent of the commercial farms had a volume of sales of \$10,000 or more. Nearly 60 percent had a volume of sales under \$5,000.

The economic pressure for farm expansion is lessened in different ways because of the circumstances under which farmers operate. For example, if a farmer has an excellent equity position and is a good manager, he will not risk much while expanding his operation, either by land acquisition through purchase or rental and/or more intensive production. But a farmer who operates a relatively small farm and who has very little capital assets has a small base from which to expand and/or adopt newly developed technologies of production. This type of farmer may be an excellent manager, but he cannot risk incurring a large indebtedness. Even if he wanted to expand his business, would credit agencies be willing to see him through his major adjustment period? This problem is discussed by Hendrix and Lanham in Chapter 14. A decision to finance this type of farmer is one of seeing him all the way through, perhaps with a complete financing "package deal." This idea is advanced and analyzed in Part III. If this financial help cannot be obtained, such a farmer must resort to dissipating his savings; thus he cannot set aside reserves for equipment replacement and building repair in order to remain in business. The third type of farmer can make the financial adjustments, but is reluctant to incur indebtedness and/or adopt the latest technologies of production. Coutu and Lindsey discuss this type of individual who has a strong "aversion to change" in Chapter 21. Perhaps this type of farmer should give strong consideration to some land rental arrangement. The big question here is whether such farmers can make capital-oriented adjustments from future gross revenues.

Farmers have very little control over prices paid for purchased factors of production. Many external forces determine these prices, such as: wage levels, the fiscal and monetary policy of our government, the costs of raw materials that are used to manufacture the input, transportation costs, and the like. The farmer is faced with continually increasing prices for these factors of production, and in addition, he is buying more of these inputs. Such a trend is a natural result of the rapid change to a highly scientific, mechanized type of agriculture. The combination of these two trends results in greater outlays for these purchased inputs. At the same time, increased output forces down agricultural product prices, and thereby, gross farm incomes. The total demand for farm products can be expected to increase with population, but at a much slower rate than the increased demands for nonagricultural products.

Farmers, and especially southern farmers, find themselves in a difficult situation. In the past, farm operators could plan to expand their business slowly, mainly from net revenues. The main line of credit was short-term, thus enabling farmers to maintain a high equity ratio. Conditions have changed because of technological progress, coupled with unfavorable price-cost relationships. As a result, needs for fixed intermediate- and long-term commitments are increasing. The problems of credit needs and credit availability are discussed in Part III and Chapters 25 and 26.

ECONOMIC GROWTH, FARMERS' VALUES, AND EDUCATION

How a farmer looks upon change depends upon his values, the resources at his command, and his ability to use these resources to accommodate change. Discussions in Chapters 19 through 21 are relevant to this subject. Problems arise because farmers react differently to growth problems, and growth affects different groups of farmers differently. It is evident that great disparities arise among the different groups of farmers. The farmer who was considered to have a goodsized farm and was obtaining a desirable level of income in 1945 or 1950, might have been operating a marginal farm and just eking out a subsistence level of living in 1959. On the other hand, operators who managed relatively small-sized units in 1945 might have been operating a farm in Economic Class I or II in 1959. Such a situation is more of an exception than the rule. It is more customary to see large commercial farms getting larger and their numbers increasing, and the number of relatively small-sized farms decreasing.

The general growth of our economy calls for continuing improvement in the quality of human resources, thereby increasing their alternatives for employment in nonagricultural jobs; and for those who continue to operate commercial farms, a greater opportunity to adjust to technological and economic changes. Discussions in Chapters 4, 22, and 23 develop this point more fully. Many farm operators, however, were not fortunate enough to enter farming at the "right" time. These less fortunate commercial farmers were unable to build a sufficient equity base to obtain enough intermediate- and long-term credit for expanding their farm business. Then, too, a longstanding philosophy in farming has been that it is "bad" to be in debt, and that farm loans should be fully amortized (cf. Chapter 20). Of necessity, some of these attitudes are changing, e.g., a greater acceptability of land rental as a sound management practice, as in Great Britain.

An important element of economic growth is that there be enough labor to supply an enlarging industry. Agriculture has served this aspect of economic growth well throughout our history. However, this outmigration of labor from agriculture is a form of capital export to other sectors. Those who leave agriculture for nonfarm jobs are usually the better-equipped young adults who have the ability to farm successfully. What type of capital investments should our society make in training these farm youngsters so that their productive potential will be fully developed regardless of the work they finally obtain? Mackie answers this question in Chapter 22.

Many farmers who cannot make a desirable living in agriculture are at a crossroad. They might be able to reorganize their farm business if capital were provided for the needed adjustments. On the other hand, such farmers are faced with sunk assets that cannot readily be converted into assets of a more liquid form; hence they appear to be helplessly frozen to agriculture (cf. Chapter 14).

Migration of labor out of agriculture results directly from a lack of economic opportunities for people in agriculture. In order to operate a farm in the future, increasing amounts of capital will be needed (Chapter 5). Our farm credit system must be set up to carry beginning farmers those who possess the attributes for success — over relatively long periods; otherwise, farming will truly become an occupation dependent upon inheritance and/or the "right" marriage. We should not overlook the strong possibility that many of our family farms may incorporate in order to finance adjustments. Credit managers who can think in terms of financing the farm business over a long period under sound farm management, rather than financing a particular farm enterprise, may play an important role in developing a sound agriculture that can withstand periods of "shock." This point is emphasized by Murray, Diesslin, et al. in Part III.

Vertical integration or contract farming has been advocated by some as a desirable device to minimize risk and uncertainty and psychological factors retarding economic growth of special groups of farmers. A detailed discussion of this subject is presented in Chapter 8. In general, the over-all objective of the integrator is to obtain an expanded market for his products and/or services; hence, we can expect these firms to be strong advocates for rapid adoption of technological innovations by farmers. Since the farmer is constantly pushed to increase efficiency in production, he will continue to make these types of capital investments. Of course, there is the danger of too rapid capital investments, which can weaken the financial structure of the farm business and make the farmer greatly vulnerable to unfavorable price-cost relationships.

On the product side, firms are demanding greater standardization of products through specification buying. Various arrangements are being developed to insure processors and marketing firms desired volumes of the "right" kinds of farm products. This trend has further intensified the need for farmers to farm more scientifically and in most cases to increase the capitalization of their businesses. This development in the growth of our nation has widened the gap between the consumer and the farmer. Usually, these integrated production-marketing arrangements provide needed capital along with management assistance.

The attitudes of farmers, the problems of adequate education for farm people, and problems in capital acquisition are particularly vital aspects of economic growth from the standpoint of capital and credit problems. Part IV and Chapter 24 are devoted to these problems.

Another phase of education is an increased research effort to analyze the economic growth problem in agriculture, and particularly the problem of use of capital and credit. Farm adjustment research considers the restrictive effects of capital on farm income. However, there are many opportunities to conduct more comprehensive studies that would indicate the productivity of capital used in different forms in different farming systems in the major farming regions of the nation. Tolley presents his views on needed research in this area in Chapter 27.

Such research and the educational programs based on these research results would enable farmers and those in a position to extend farm credit to make more intelligent decisions on the extent of reorganization possible and the level of resulting incomes that could be expected. This credit-centered research could also point the way for needed changes in the farm finance structure to accommodate orderly adjustments by the nation's commercial farmers. In many instances, such research would more clearly help low-income farmers analyze their own opportunities for continuing in agriculture as compared with alternative forms of employment. There is a continuing need for research to determine how capital already committed to farming, and capital from other sources that may be committed to farming, can be utilized more efficiently so that the returns will compare favorably with returns from other forms of investment. Such research should include the effects of investment on farm output and rates of aggregate investment consistent with the growth in output needs. This information will be helpful in making an intelligent determination of how much investment can be restored to agriculture relative to the rest of the economy.

Other studies that deal with attitudes of farm families toward the use of credit would help our educational workers and credit representatives to know their clients better, and hence would aid in breaking down barriers to more effective use of outside capital by the farm firm. Part V is concerned with the above-mentioned considerations.

NATURE OF SOUTHERN AGRICULTURAL GROWTH

While the Southeast appears to have lost its competitive position in the production of cotton, it seems to have gained in the area of livestock production. The changes that have occurred have forced southern farmers to acquire more capital, land resources, technical knowledge, and managerial ability. Since most small-scale and low-income farms are in the South, the needed adjustments have been more difficult to achieve in this region than elsewhere.¹⁰ By the same token, more people in southern agriculture have been affected by the economic pressures exerted by structural changes than elsewhere in the country. The problems of small farms, lack of education, low income, inadequate capital resources, and a surplus of farm labor make the job of agricultural and resource development in the Tennessee Valley and Southeast very difficul

According to the 1954 Census of Agriculture, there were 4,783,021 farms in the United States. Of this total, 30 percent, or 1,455,404, were part-time and residential farms, and 26 percent, or 1,225,775, were small commercial farms – Economic Classes V and VI. Thus in 1954, 56 percent of all farmers received gross farm incomes of less than \$2,500.

Twenty-six percent of all farmers in the United States in 1954 had gross farm sales of less than \$2,500, with farm income exceeding nonfarm income, and with operators working less than 100 days off the farm. Of these 1.2 million farms, 63 percent were in the South. Of the remaining 37 percent, only 5 percent were in the West. Except for southern Missouri, parts of the Middle West and Northeast, and the cutover lands of the Great Lake States, the low-income farms are largely located in the South. In 1954 these 1.2 million farmers had gross farm sales of \$1.8 billion -- or 7 percent of all farm products sold in the United States. Thus, less than half, or 44 percent, of all farmers had gross farm sales of more than \$2,500, and they produced 91 percent of the farm products. In the TVA region, only 15 percent of

¹⁰A. B. Mackie and E. L. Baum, "Programs for commercial farmers with low incomes," Problems and Policies of American Agriculture, op. cit., pp. 406-29.

the farmers had gross farm sales of \$2,500 or more in 1954, and these farmers produced 68 percent of all farm products.

Within the South, the highest proportion of the low-income farms are in the southeastern and Delta cotton areas and the general farming areas of the Appalachian Mountains. In these areas, nearly half of the commercial farms are small-scale units. Many older people and many people with low levels of education live on these farms, as indicated by Mackie in Chapter 22.

There is general agreement that the cause of low farm incomes is lack of adequate productive resources, especially land, capital, and in many instances educational training. Ownership and/or control of capital and land, along with improved levels of education, are thus prerequisites for production and, hence, farm income. Of course, management of productive resources is important with respect to the level of production efficiency, once the control of resources has been acquired.

It has been stated that the causal relationship of low income and low capital per worker has been the primary reason for the existence and persistence of low farm incomes. That is, low incomes remain excessively low largely because of the low level of capital available per worker, and the inadequate amount of capital is largely a consequence of low income. Therefore, low-capital and low-income farms in historically less prosperous farming regions, such as in the Southeast and the Tennessee Valley, tend to remain inefficient and low-producing units.

Historically, it has been shown that since 1870 gross capital formation in agriculture has been very closely related to gross income.¹¹ This remarkably consistent relationship of gross capital formation to gross income emphasizes the importance of the latter, both as a source of new capital and as an incentive for investing new capital. Thus, we could conclude that the prospect for acquiring new capital by Classes V and VI farms would be very dark indeed. There are indications, however, that a family's present net worth has very little relationship to its capacity to use capital efficiently and to save when it has a good opportunity to do so.¹²

The number of farms in the South is expected to decrease at a greater rate than in other regions.¹³ Associated with increasing emphasis upon livestock production, there is expected to be a gradual shift in the pattern of land use. An increased acreage of cropland is expected to be pressed into forage production. Grain production should increase some, but not in direct proportion to the increase in livestock production. Two factors are affecting and will continue to affect the rate at which grain production will be increased in the region. These are (1) the availability of and access to midwestern grain that may be brought into the region at economical rates by barge transportation, and (2) the

¹¹ Alvin S. Tostlebe, Capital in Agriculture: Its Formation and Financing Since 1870, **Princeton University Press, Princeton, N. J.**, 1957, p. 98.

¹² Ibid., pp. 149-51.

¹³ J. M. Brewster, "Long-run prospects of southern agriculture," Southern Econ. Jour., **Vol. 26**, No. 2, Oct., 1959, pp. 134-40.

development of high-yielding forages and forage fertilization in the southern region, which makes some livestock production possible with a minimum grain requirement.

If the TVA region and southeastern agriculture is to achieve the necessary and desirable adjustments in the years ahead, the capital and credit needs should be appraised, and the current credit facilities examined to determine whether they will meet the ever-increasing capital needs of the future, as suggested in Part III.